REVIEWS & NOTICES

Wildlife Ecology: An Analytical Approach, by AARON N. MOEN. W. H. Freeman, San Francisco, USA, and Reading, England: xviii + 458 pp., 182 illustr., 56 tables, 26 × 18 × 2.3 cm., $17.50 or £7.60, 1973.

The content of this book is largely devoted to analysis of energy relationships between the organism and its environment through the use of ecological models. Its particular concern is the analysis of wild ruminant requirements, throughout the animals' life-span, and the ability of the range to satisfy them. Publishers' claims aside, it must certainly be among the first comprehensive textbooks on analysis of environmental responses of free-ranging mammals in terms of energy metabolism and nutrition, and, in common with any new look at an apparently well-established situation, its study provides an instructive and illuminating experience.

In presenting his information, the author follows his own philosophy of analytical ecology, namely of providing a progression of analyses from the simple to the complex. He is initially concerned with environmental interactions of single animals and then progresses to consideration of groups, populations, and, finally, ecological organizations. He reviews the physical, chemical, and thermal, characteristics of the biosphere, then considers animal physiology and behaviour (mainly of wild ruminants and with continuing emphasis on the energetics of interactions). These data provide the basis for his final section, which comprises an analysis of the biological relationships of the animal and its range, with special reference to the concepts of homeothermy and carrying capacity.

The author's English composition is clear and concise, and commendably free from jargon. The reader may experience problems, however, in maintaining continuity of thought between certain subsections of the book. It is sometimes difficult to appreciate the relevance of some of the data that are reviewed, until one has the opportunity of studying the more complex models of the final section, when most of the apparent irrelevancies slot into place.

One of the headaches of computer analysis is the need to quantify relationships. Unfortunately, many of the required data on energy metabolism of wild animals, for example, are lacking, and so the author has been forced to lean heavily on similar data for domestic stock. This expedient should prompt no serious criticism, however, at least for the purposes of demonstrating methods and providing insight into the more complex ecological interactions. Animal behaviour provides obstacles of a different sort, and one can sympathize with the author's lament that 'behavioural characteristics are difficult to quantity'—a comment which could probably rank as one of the understatements of the decade!

The penultimate chapter, 'Predicting Population Dynamics,' considers the relative importance of different factors in earlier analyses in the book and attempts a more detailed analysis of the animal's relationships with its environment. It identifies productivity simulations as the key to predictions on a gamut of population parameters and makes extremely interesting reading. In contrast, parts of the last chapter, 'Ecological Analyses and Decision-making Procedures' are painfully weak and ought to be rewritten or excluded from subsequent editions.

At the present time, perhaps one of the more useful functions that this book will serve is to clarify the current role of models in ecological analysis—comment on which is scattered, sometimes almost incidentally, throughout the text. The author admits that the natural world is too complex to be modelled in its entirety, but he maintains that there is a considerable amount of information to be obtained from models comprising the more important variables in natural systems. In addition, the construction of models for a specific set of conditions can provide insight into the relative values of different responses of the organism to its environment. Simulation models of interactions can also provide the means for estimating the quantitative nature of the variables and for identifying specific variables that require more exhaustive study. The point is made that tests of significance must be considered in the context of the ecosystem, and that the significance of variation in any one parameter cannot be assessed adequately unless its effect is considered in relation to the other ecosystem components that are affected by it.

Professor Moen's book may not entirely eliminate scepticism over the importance of modelling in ecological analyses, but it should certainly remove some of the more prevalent misconceptions on the subject.

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Ecology and Economics: Controlling Pollution in the 70s, Edited by MARSHALL I. GOLDMAN. Prentice-Hall, Englewood Cliffs, New Jersey: xi + 234 pp., 3 figs, 23.5 × 16 × 1.9 cm, US $2.95, 1972.

The Spoils of Progress: Environmental Pollution in the Soviet Union, by MARSHALL I. GOLDMAN. MIT Press, Cambridge, Massachusetts, and London, England: xi + 372 pp., illustr., 21 × 14.3 × 3.4 cm, US $7.50 or £3.60, 1972.

Several common themes are explored in Professor Goldman's two volumes: in particular those which establish the pervasiveness of environmental disruption in quite distinct institutional settings. Pollution has its source in development itself. The relatively similar processes and contexts of industrialization, modernization, urbanization, and the consequent rise in affluence, are the factors to reckon with—not socialism or capitalism as such. The author/editor asks the reader to probe underlying economic relationships, particularly the tendency for production to generate untoward externalities, in order to understand how Man almost universally damages his setting, how he encounters difficulties in assessing such effects, and how he may yet, perhaps, redeem his stewardship of the Earth.

Ecology and Economics serves as an introductory text, a collection of fifteen rather brief essays (four by Goldman himself) which approach the subject from an economic, technological, and administrative, perspective. A nice balance is held between economic theory and case studies (USA, Europe, Japan, and USSR). The articles seek first to explain why pollution is so widespread: traditional methods of control fail, both those of the market and those

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